Claims

I/We Claim:

Sub B1

1. An expression vector which is a recombinant DNA molecule or a purified DNA molecule, other than a whole chromosome, comprising a promoter sequence operably linked to a coding sequence, said coding sequence encoding a polypeptide comprising the core protein of a human polymorphic epithelial mucin, which core protein is specifically bound by monoclonal antibody SM3.

2. A method of eliciting an immune response in a subject against an epitope specifically bound by monoclonal antibody SM-3, which comprises administering to the subject a vector according to claim 1, under conditions in which the vector directs expression of said antigen, which elicits said immune response.

3. A method of immunizing a subject against a disease characterized by the immunological presentation of an epitope specifically bound by monoclonal antibody SM-3, which comprises administering to the subject a vector comprising a promoter sequence operably linked to a coding sequence, the latter encoding an antigen, under conditions in which the vector directs expression of said antigen, which elicits an immune response which is protective against such disease, said antigen selected from the group consisting of

Sub A1

(a) an artificial antigen comprising (i) an antigenically active segment, at least five consecutive amino acids in length, of a tandem repeat sequence of the core protein of a human polymorphic epithelial mucin, which core protein is specifically bound, at the site of said segment, by monoclonal antibody SM-3, and (ii) a second amino acid sequence, the segment and the second amino acid sequence being linked, directly or indirectly, so as to form a non-naturally occurring antigen specifically bound, at the site of said segment, by monoclonal antibody SM-3,

(b) an antigenic fragment of the core protein of a human

polymorphic epithelial mucin which comprises at least ten consecutive amino acids of a tandem repeat sequence of the core protein of a human polymorphic epithelial mucin, which core protein is specifically bound, at a site within said fragment, by monoclonal antibody SM-3, said fragment also being specifically bound by SM-3, and

(c) a polypeptide comprising the core protein of a human polymorphic epithelial mucin, which core protein is specifically bound by monoclonal antibody SM-3.

4. The method of claim 3 in which the disease is a cancer.

5. The method of claim 4 in which the antigen is (a) above.

6. The method of claim 4 in which the antigen is (b) above.

7. The method of claim 4 in which the antigen is (c) above.

8. A method of expressing an SM-3 reactive antigen in a host cell which comprises introducing into a suitable host cell a vector comprising a promoter sequence operably linked to a coding sequence, the latter encoding an antigen, and subjecting the cell to conditions in which the vector directs expression of said antigen, the antigen being selected from the group consisting of

(a) an artificial antigen comprising (i) an antigenically active segment, at least five consecutive amino acids in length, of a tandem repeat sequence of the core protein of a human polymorphic epithelial mucin, which core protein is specifically bound, at the site of said segment, by monoclonal antibody SM-3, and (ii) a second amino acid sequence, the segment and the second amino acid sequence being linked, directly or indirectly, so as to form a non-naturally occurring antigen specifically bound, at the site of said segment, by monoclonal antibody SM-3,

(b) an antigenic fragment of the core protein of a human

polymorphic epithelial mucin which comprises at least ten consecutive amino acids of a tandem repeat sequence of the core protein of a human polymorphic epithelial mucin, which core protein is specifically bound, at a site within said fragment, by monoclonal antibody SM-3, said fragment also being specifically bound by SM-3, and

(c) a polypeptide comprising the core protein of a human po3lymorphic epithelial mucin, which core protein is specifically bound by monoclonal antibody SM-3.

9. The method of claim 8 in which, as a result of such expression, said antigen is accessible to the immune system of the subject.

10. The method of claim 8 in which the host cell is in a cell culture, and the expressed antigen is harvested from the cell culture.